

CLAIMS

I claim:

1 1. A method for stretching and mounting a screen printing
2 screen, comprising:

3 providing an outer frame;

4 providing an inner frame;

5 providing a screen/mesh with two print direction sides and
6 two ends;

7 clamping an end of the screen/mesh in a print direction;

8 applying significant tension forces to the screen/mesh in
9 the print direction;

10 moving the outer frame to contact the stretched screen/mesh;

11 attaching the screen/mesh to the outer frame in the print
12 direction;

13 trimming excess screen/mesh in the print direction;

14 moving the inner frame to contact the screen/mesh;

15 attaching the screen/mesh to the inner frame in the print
16 direction; and

17 providing imaging/printing on the screen/mesh.

1 2. The method according to claim 1, further comprising
2 applying tension forces to the screen/mesh in a direction
3 perpendicular to the print direction that are lower than the
4 applied significant forces in the print direction.

1 3. The method according to claim 1, further comprising
2 applying small lateral forces to the screen/mesh perpendicular to
3 the print direction prior to clamping or stretching the
4 screen/mesh to ensure the screen/mesh is flat, with no
5 significant non-uniformities/wrinkles.

1 4. The method according to claim 1, wherein the clamping
2 step further comprises:
3 positioning the outer frame; and
4 clamping the screen/mesh to the outer frame.

1 5. The method according to claim 1, wherein the stretching
2 step further comprises:
3 applying a strip of material to each print direction side of
4 the screen/mesh to provide a seal against fluid encroachment in a
5 bond between the screen/mesh and the inner frame.

1 6. The method according to claim 1, wherein the attaching
2 step further comprises attaching the screen/mesh to the inner
3 frame by using spray adhesive, adhesive glue, or double sided
4 self-adhesive tape.

1 7. The method according to claim 1, wherein the providing
2 an inner frame step further comprises providing the inner frame
3 in a fixed format.

1 8. The method according to claim 1, wherein the providing
2 an inner frame step further comprise:

3 providing the inner frame in a multi-piece format with
4 plural pieces and connection pieces; and

5 applying lateral tension forces to the screen/mesh through
6 lateral fixed displacements of the piece movements or the
7 connection pieces of the multi-piece inner frame relative to each
8 other.

1 9. The method according to claim 1, wherein the clamping an
2 end of the screen/mesh step further comprises clamping one of the
3 two ends of the screen/mesh before stretching and clamping the
4 other of the two ends.

1 10. The method according to claim 1, further comprising
2 ink/fluid barriers attached to the inner frame.

1 11. The method according to claim 1, wherein the ink/fluid
2 barriers are attached to the inner frame using hook and loop
3 fasteners, spray adhesive, liquid adhesive, self adhesive double
4 sided tape, mechanical locking elements, or single sided adhesive
5 tape.

1 12. The method according to claim 1, wherein the providing
2 a screen/mesh step further comprises providing the screen/mesh as
3 one or more screens/meshes on a roll.

1 13. The method according to claim 12, wherein the providing
2 a screen/mesh step further comprises:

3 applying a strip of material to each print direction side of
4 the one or more screens/meshes to provide an attachment point,
5 support, and a seal against fluid encroachment in a bond between
6 the one or more screens/meshes and the inner frame.

1 14. The method according to claim 12, wherein the providing
2 a screen/mesh step further comprises separating individual
3 screen/mesh pieces from the one or more screens/meshes for
4 shipping and storage, and providing the separated individual
5 screen/mesh pieces with a protective material.

1 15. The method according to claim 14, wherein the providing
2 a screen/mesh step further comprises:

3 applying a strip of material to each print direction side of
4 the separated individual screen/mesh pieces to provide an
5 attachment point, support, and a seal against fluid encroachment
6 in a bond between the separated individual screen/mesh pieces and
7 the inner frame.

1 16. The method according to claim 1, wherein the providing
2 a screen/mesh step further comprises providing the screen/mesh as
3 individual pre-cut pieces that are edge sealed to ensure
4 dimensional stability and integrity.

1 17. The method according to claim 16, wherein the providing
2 a screen/mesh step further comprises:

3 applying a strip of material to each print direction side of
4 the individual pre-cut pieces to provide an attachment point,
5 support, and a seal against fluid encroachment in a bond between
6 the individual pre-cut pieces and the inner frame.

1 18. An apparatus for stretching and mounting a screen
2 printing screen, the apparatus comprising:

3 an inner frame with a support barrier mechanism for
4 ink/fluid retention for controlled transfer during a printing
5 period to a screen/mesh with two print direction sides and two
6 ends; and

7 an outer frame configured for placing outside the inner
8 frame,

9 wherein the inner and outer frames do not connect, support,
10 or constrain each other to provide tension and ink barrier
11 functions, and significant tension forces are applied to the
12 screen/mesh in a print direction.

1 19. The apparatus according to claim 18, wherein the
2 apparatus is configured to apply tension forces to the screen/mesh
3 in a direction perpendicular to the print direction that are lower
4 than the applied significant forces in the print direction.

1 20. The apparatus according to claim 18, wherein the
2 apparatus is configured to apply small lateral forces to the
3 screen/mesh perpendicular to the print direction prior to
4 clamping or stretching the screen/mesh to ensure the screen/mesh
5 is flat, with no significant non-uniformities/wrinkles.

1 21. The apparatus according to claim 18, further comprising
2 a positioning device configured to position the outer frame, and
3 clamp elements configured to clamp the screen/mesh to the outer
4 frame after the outer frame is positioned.

1 22. The apparatus according to claim 18, further comprising
2 means for applying strip material to edges of the screen/mesh in
3 the print direction to provide a seal against fluid encroachment
4 in a bond between the screen/mesh and the inner frame.

1 23. The apparatus according to claim 18, further comprising
2 attachment means for attaching the screen/mesh to the inner frame
3 by using spray adhesive, adhesive glue, or double sided
4 self-adhesive tape.

1 24. The apparatus according to claim 18, wherein the inner
2 frame is configured in a fixed format.

1 25. The apparatus according to claim 18, wherein the inner
2 frame is configured in a multi-piece format with plural pieces
3 and connection pieces, and is configured for applying lateral
4 tension forces to the screen/mesh through lateral fixed
5 displacements of movements of the pieces or the connection pieces
6 of the multi-piece inner frame relative to each other.

1 26. The apparatus according to claim 18, wherein the
2 clamping an end of the screen/mesh step further comprises
3 clamping one of the two ends of the screen/mesh before stretching
4 and clamping the other of the two ends.

1 27. The apparatus according to claim 18, further comprising
2 ink/fluid barriers attached to the inner frame.

1 28. The apparatus according to claim 18, wherein the
2 ink/fluid barriers are attached to the inner frame using hook and
3 loop fasteners, spray adhesive, liquid adhesive, self adhesive
4 double sided tape, mechanical locking elements, or single sided
5 adhesive tape.

1 29. The apparatus according to claim 18, wherein the
2 screen/mesh is configured as one or more screens/meshes on a
3 roll.

1 30. The apparatus according to claim 29, wherein the one or
2 more screens/meshes is configured with a strip of material on
3 each print direction side of the one or more screens/meshes to
4 provide an attachment point, support, and a seal against fluid
5 encroachment in a bond between the one or more screens/meshes and
6 the inner frame.

1 31. The apparatus according to claim 29, wherein the
2 screen/mesh is configured as a separate individual screen/mesh
3 piece with a protective material for shipping and storage.

1 32. The apparatus according to claim 31, wherein the
2 providing a screen/mesh step further comprises:

3 applying a strip of material to each print direction side of
4 the separated individual screen/mesh pieces to provide an
5 attachment point, support, and a seal against fluid encroachment
6 in a bond between the separated individual screen/mesh pieces and
7 the inner frame.

1 33. The apparatus according to claim 18, wherein the
2 screen/mesh is configured as individual pre-cut pieces that are
3 edge sealed to ensure dimensional stability and integrity.

1 34. The apparatus according to claim 33, wherein the
2 pre-cut pieces each include a strip of material on each print
3 direction side to provide an attachment point, support, and a
4 seal against fluid encroachment in a bond between the individual
5 pre-cut pieces and the inner frame.

1 35. A method of coating a screen printing screen,
2 comprising:

3 providing a screen/mesh with two print direction sides and
4 two ends; and

5 edge sealing or pre-coating each print direction side of the
6 screen/mesh to provide a seal against fluid encroachment in a
7 bond between the screen/mesh and a screen printing frame.

1 36. The method according to claim 35, wherein the providing
2 a screen/mesh step further comprises providing the screen/mesh as
3 one or more screens/meshes on a roll.

1 37. The method according to claim 36, wherein the edge
2 sealing or pre-coating step further comprises:

3 applying a strip of material to each print direction side of
4 the one or more screens/meshes.

1 38. The method according to claim 36, wherein the providing
2 a screen/mesh step further comprises separating individual
3 screen/mesh pieces from the one or more screens/meshes for
4 shipping and storage, and providing the separated individual
5 screen/mesh pieces with a protective material.

1 39. The method according to claim 38, wherein the providing
2 a screen/mesh step further comprises:

3 applying a strip of material to each print direction side of
4 the separated individual screen/mesh pieces to provide an
5 attachment point, support, and a seal against fluid encroachment
6 in a bond between the separated individual screen/mesh pieces and
7 the inner frame.

1 40. The method according to claim 35, wherein the providing
2 a screen/mesh step further comprises providing the screen/mesh as
3 individual pre-cut pieces.

1 41. The method according to claim 40, wherein the providing
2 a screen/mesh step further comprises:

3 applying a strip of material to each print direction side of
4 the individual pre-cut pieces to provide an attachment point,
5 support, and a seal against fluid encroachment in a bond between
6 the individual pre-cut pieces and the inner frame.

1 42. The method according to claim 35, wherein the edge
2 sealing or pre-coating step further comprises pre-coating stencil
3 material onto the individual pre-cut pieces.

1 43. A screen/mesh for a screen printing screen, the
2 screen/mesh having two print direction sides and two ends, and
3 being edge sealed or pre-coated along each print direction side
4 of the screen/mesh to provide an attachment point, support, and a
5 seal against fluid encroachment in a bond between the screen/mesh
6 and a screen printing inner frame.

1 44. The screen/mesh according to claim 43, wherein the
2 screen/mesh is one or more screens/meshes on a roll.

1 45. The screen/mesh according to claim 44, wherein the one
2 or more screens/meshes has a strip of material on each print
3 direction side.

1 46. The screen/mesh according to claim 44, wherein the one
2 or more screens/meshes are separated into individual screen/mesh
3 pieces from the one or more screens/meshes for shipping and
4 storage, and the separated individual screen/mesh pieces each has
5 a protective material.

1 47. The screen/mesh according to claim 46, wherein each
2 separated individual screen/mesh piece has a strip of material
3 one each print direction side to provide an attachment point,
4 support, and a seal against fluid encroachment in a bond between
5 the separated individual screen/mesh pieces and the inner frame.

1 48. The screen/mesh according to claim 43, wherein the
2 screen/mesh is an individual pre-cut piece.

1 49. The screen/mesh according to claim 48, wherein the
2 individual pre-cut piece includes a strip of material on each
3 print direction side of the individual pre-cut pieces to provide
4 an attachment point, support, and a seal against fluid
5 encroachment in a bond between the individual pre-cut piece other
6 individual pre-cut pieces and the inner frame.

1 50. The screen/mesh according to claim 43, wherein the
2 screen/mesh includes pre-coating stencil material on the
3 screen/mesh.